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Canaryseed in Saskatchewan

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Canaryseed (*Phalaris canariensis*), or annual canarygrass, has one market. It is a major component of feed mixtures for caged and wild birds. The seedlings resemble green foxtail or corn seedlings, are finely leafed, and purple to red at the base of the stem. Mature plants are approximately one metre in height and have small compact heads. Tiny hairs at the base of the seed make canaryseed dust very irritating to the skin during handling.

Canaryseed bushel weight is 50 pounds. Feed nutrient values of canaryseed straw are on average: crude protein 4 to 5%, TDN 40 to 48%, calcium 0.3%, and phosphorus 0.3%. The average yield of this crop in Saskatchewan is approximately 1,100 kg/ha (1,000 lbs/acre).

Canaryseed is an annual grain with major production in Canada, USA, Hungary, Australia, Argentina, and Mexico.

Production in North America began in Minnesota and North Dakota after WW II and later in Manitoba and Saskatchewan. Production in Canada had grown to 150,000 ha (375,000 acres) in 1995, with over 90% located in Saskatchewan.

Major areas of production in Saskatchewan are the Kindersley-Elrose, Regina plains, and Melfort areas. Canaryseed can be grown successfully wherever wheat grows well, except in drier areas of the Brown soil zone.

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Adaption

Canaryseed is a cool season crop which prefers long warm days and cool nights, making it well adapted to western Canada. It matures in approximately 100 days. Canaryseed is shallow rooted and is more sensitive to heat and less drought-tolerant and salt-tolerant than wheat. It does best on heavy, moisture-retentive soils. It can tiller profusely and may lodge when soil fertility and moisture are plentiful.

Canaryseed and flax seeds are similar in size and shape and are difficult to separate. Do not seed canaryseed on flax stubble.

Canaryseed is sensitive to the residues of herbicides containing trifluralin (TREFLAN(R), RIVAL(R), etc.) and ethalfluralin (EDGE(R)) which are commonly used in the production of canola and pulse crops. For this reason, caution is advised when choosing canaryseed as a crop grown in rotation with canola or pulses. (see Weed Control below)

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Varieties

The two varieties registered in Canada, Keet and Elias, perform similarly in Saskatchewan. Elias has a larger head and longer straw. Keet is earlier maturing and has improved lodging resistance. Breeder seed for Keet and Elias is

maintained at the Crop Development Centre at the University of Saskatchewan.

Further information on canaryseed varieties is available in the annually updated Saskatchewan Agriculture and Food publication, "Varieties of Grain Crops."**

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Seeding

Canaryseed should be seeded as early as possible in May. Late seeding can lead to delayed maturation of the straw during harvest. Green or tough canaryseed straw can be extremely difficult to thresh.

Seeding depth should be 5 to 6 cm (2 to 2 1/2 in), but a more shallow depth is preferred under optimum soil moisture conditions.

The suggested seeding rate is 30 to 38 kg/ha (27 to 35 lb/acre).

The crop can be seeded using most seeders. Due to their small size, precautions should be taken to ensure that seeds are placed into firm, moist soil.

Optimum plant densities are achieved by planting 25 seeds per 30 cm (12 in) in seed rows 15 cm (6 in) apart.

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Fertilization

Canaryseed, like all crops, requires nitrogen, phosphorus, potassium, sulphur, and micronutrients. Fertilization should be based on soil testing and can be fine-tuned with tissue testing. Nitrogen and phosphorus requirements are similar to wheat. Unlike wheat, only a small amount of fertilizer can be safely placed with the seed. A University of Saskatchewan study found that the tolerance of canaryseed to seed-placed fertilizer is similar to that of oilseeds. The amount of fertilizer that can be safely seed-placed depends on seeding equipment, type of fertilizer, and soil and climatic conditions.

For more information on this subject, refer to the canola and flax sections of the Saskatchewan Agriculture and Food publication, "Revised Guidelines for safe rates of fertilizer applied with the seed."**

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Weed Control

Canaryseed develops slowly and competes poorly with weeds. Use clean seed to avoid the spread of weed species. Avoid areas where volunteer cereal competition is anticipated. Do not seed canaryseed on flax stubble as the two seeds are difficult to separate. Delayed seeding of canaryseed to control early flushes of annual weeds with cultivation can lead to late maturity of the straw at harvest. Avoid late seeding.

Most annual weed species can be controlled by herbicides. "The Crop Protection Guide,"** published annually by Saskatchewan Agriculture and Food, provides information on the use of crop protection products in canaryseed. Always read and follow herbicide product labels for specific details regarding the use of herbicides in canaryseed.

Herbicides registered for the control of wild oat in canaryseed are AVENGE(R) and MATAVEN(R) L. Herbicides registered for the control of green foxtail (wild millet) are LASER(R), STAMPEDE(R) 360, and STAMPEDE CM. Herbicides registered for the control of broadleaf weeds are BANVEL(R) + MCPA Amine, BUCTRIL-M(R), LASER, PARDNER(R), STAMPEDE CM, and TARGET(R). Applications of ester formulations of 2,4-D have caused crop stunting, irregular growth, and reduced canaryseed yields.

The following herbicides will cause severe injury or death to this crop and should not be used. ACHIEVE(R) DG, diclofop methyl (HOE-GRASS(R), HOE-GRASS II(R)), metribuzin (SENCOR(R), LEXONE(R) DF), trifluralin (TREFLAN, RIVAL, HERITAGE(R), FORTRESS(R), ADVANCE(R), BONANZA(R)), EDGE, POAST(R), SELECT(R), ASSURE(R), VENTURE(R), FUSION(R), and fenoxaprop-p-ethyl (PUMA(R), TRIUMPH PLUS(R)). Care must be taken to avoid drift of these products onto canaryseed.

Precaution – Canaryseed is susceptible to a number of herbicide residues in the soil and should not be seeded for at least 24 months after a spring trifluralin treatment (see products above) or EDGE treatment, or 30 months after a fall trifluralin or EDGE treatment.

Canaryseed should not be seeded for at least 24 months after an application of ASSERTR. Fields treated with ALLYR, GLEANR, AMBERR, or PURSUITR should not be sown to canaryseed until a field bioassay determines it is safe to do so.

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Insect Control

Aphids – The bird cherry oat aphid and the English grain aphid can often be observed infesting canaryseed. Usually, they are not abundant enough to cause economic losses. Some years are favourable for early infestations where the bird cherry oat aphid feeds on the stems, underside of leaves, and in the canaryseed "boot" (area where the flag leaf joins the central stem) before heading. These early infestations can lead to greater crop injury.

Aphids often hide along the small stem inside the canaryseed head. The head should be bent and closely inspected when making counts to determine infestation levels.

Application of insecticide should take place at early heading (approximately early August) when aphids are present. Do not spray after the soft dough stage of the seed as aphids do little economic damage after that time.

MALATHION and dimethoate (CYGON(R)) are registered for control of aphids in canaryseed.

Research has not been carried out to determine economic thresholds for aphid infestations in canaryseed in Saskatchewan. Information from the USA and from other cereal crops indicates that approximately 10 to 20 aphids per stem may cause enough crop damage to warrant insecticide application. As canaryseed prices increase, the economic threshold levels decrease.

Further information on control of aphids in canaryseed is available in the annually updated Saskatchewan Agriculture and Food publication, "Crop Protection Guide."***

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Disease Control

Ergot can be a problem in canaryseed in high rainfall areas. Septoria leaf mottle (Septoria triseti) was first identified on canaryseed in 1988 and can be destructive in some years. Wet conditions favour the development of this disease. In 1993, many growers reported surprisingly low yields and lower than average bushel weights. Some of this loss was associated with Septoria leaf mottle.

Septoria leaf mottle on canaryseed is a residue-borne disease. Canaryseed crops that have been sown on or adjacent to canaryseed stubble are considered "high risk." A crop rotation with at least a two-year break from canaryseed is the best way to reduce economic infestations of the disease.

Growers should examine their fields for signs of disease.

Septoria leaf mottle is difficult to recognize. The contrast between healthy green leaf area and diseased leaf area is not great. Lower leaves that have been shaded by a dense canopy may have a distinctive symptom – "green islands." Green islands are infected spots that remain green as the rest of the leaf yellows.

Close inspection of the diseased area or discoloured leaf tips will reveal a large number of pycnidia (small black spore-producing bodies) which look like pepper sprinkled on the leaf. A magnifying glass will assist in identifying pycnidia which are embedded within the leaf. Under wet conditions, pycnidia ooze golden brown globs of spores which spread to healthy leaves and plants by rain splash. In severe infestations, the pycnidia can cover the entire plant including the head.

In severe infestations where the pycnidia are present on the head, spores will most likely find their way onto the seed during harvest. It is not known if these spores can survive on the seed until the following spring. Under this situation, it may be advisable to obtain different seed.

No fungicides are registered for the control of Septoria leaf mottle in canaryseed.

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Floret Blasting

Canaryseed is shallow rooted and more sensitive to heat and drought than wheat. Mechanisms used by the plant to adjust for stress include tiller die-back and blasting of the top portion of the head. If these top florets are not pollinated, they will die and turn white.

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Harvesting

The presence of tiny hairs at the base of the seed makes canaryseed dust very irritating to the skin during harvesting and handling. Research has linked this dust to respiratory health problems. Dust masks should be worn when handling this crop.

Do not cut canaryseed too soon. Canaryseed is very shatter resistant and can be straight-combined. Swathing should be delayed until the crop has reached full maturity and immediately combined. Canaryseed can be swathed slightly earlier and permitted to cure in the swath, however, do not swath when the straw is still green. The straw is very wiry and can be difficult to thresh if cut before maturity. In this situation, the seed may already be very dry and prone to dehulling before the straw is mature. The crop will dry faster and receive less bird damage if it is left standing than if it is swathed.

Canaryseed is considered dry at 13% moisture. At this moisture level, it will thresh cleanly from the head. The heads tend to remain intact after threshing so they should be checked for the presence of remaining seeds.

Combine cylinder or rotor speeds should be approximately 500 to 750 rpm. The manufacturer's recommendations should be checked for individual combines.

Caution must be taken to keep dehulling to a minimum, since dehulled canaryseed is classed as dockage and must be cleaned out. Wind settings should be lower than for wheat, at approximately the flax setting. Sieve settings should be set similar to flax. Augers should be run full to decrease dehulling.

Canaryseed with the hull intact is shiny and golden yellow. Dehulled canaryseed is dark brown in colour.

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Processing

Canaryseed should be cleaned before it is shipped for export. This is called primary processing. Saskatchewan has a large special crop primary processing industry. Over 50 businesses were processing canaryseed in 1995. Canaryseed is sold to export markets in bulk or in bags.

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Grading

Canaryseed does not fall under the authority of the Canada Grain Act, so the Canadian Grain Commission has not established grades for the crop. However, the Commission does perform dockage analysis on samples submitted.

Canaryseed is cleaned to exporters specifications, usually a minimum purity analysis of 99% pure seed, with a maximum of 4% dehulled seed.

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Marketing

Canaryseed production contracts are available from a number of grain companies. This provides producers with the option of locking in a price and a market before the growing season. For further information on contracts and contracting, consult the Saskatchewan Agriculture and Food publication, "Contracts for Special Crops."*** The Saskatchewan Agriculture and Food publication, "Saskatchewan Special Crop Market and Contract Synopsis"*** provides an annually updated list of companies contracting and purchasing canaryseed.

Saskatchewan is the largest exporter of canaryseed in the world. Our production accounts for over one-half of total annual world production of approximately 300,000 tonnes, and over two-thirds of world trade. Increases or decreases in production of canaryseed in Saskatchewan can have a major impact on world price and the market is characterized by large swings in price.

Canaryseed prices and other special crop prices can be monitored through the use of a computer and modem. Farm Business Management Information Network (FBMInet)** provides this price tracking service on a daily basis, along with other "on-line" agricultural information such as this fact sheet.

World consumption of canaryseed remains fairly constant regardless of price, indicating little substitution of other birdseed for canaryseed. Demand and consumption do not fluctuate greatly during recessionary periods. Birds are popular pets for apartment dwellers, and export markets are in countries with high populations such as the USA, Japan, Europe, Taiwan, Mexico, and Brazil.

Domestic commercial bird feed is generally made by blending various seeds such as millet, safflower, canaryseed, flaxseed and canola. Bird feed comes in two basic types: indoor and outdoor. No standards exist for mixes or packaging.

Western Canada supplies most of the birdseed ingredients required by both the indoor and outdoor domestic birdseed packaging industry. Western Canadian packagers are now distributing bird feed mixes locally, mainly to retail grocery chains and pet stores.

Large processors distribute to individual bird breeders, large and small retail stores and major users such as zoos and wild animal farms. Some processors package, label and customize products exclusively for pet, grocery and hardware store chains.

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Economics of Production

The Saskatchewan Agriculture and Food publication, "Crop Planning Guide Alternative Crops"*** contains annually updated information on the costs of production and projected returns from canaryseed.

** publication or information available at Rural Service Centres in Saskatchewan

Written and edited by:

R. McVicar, D. Kaminski, L. Juras, B. Green, L. Harris
Saskatchewan Agriculture and Food

A. E. Slinkard, P. Hucl
Crop Development Centre, University of Saskatchewan

F. A. Holm
Department of Crop Science and Plant Ecology, University of Saskatchewan

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Government of
Saskatchewan

3085 Albert Street, Regina, Saskatchewan, Canada S4S 0B1

Phone: (306) 787-5140

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